

NEW VEHICLE FORWARD LIGHTING TECHNOLOGIES

WORKSHOP ON HEADLAMP
SAFETY METRICS: BALANCING
VISIBILITY AND GLARE

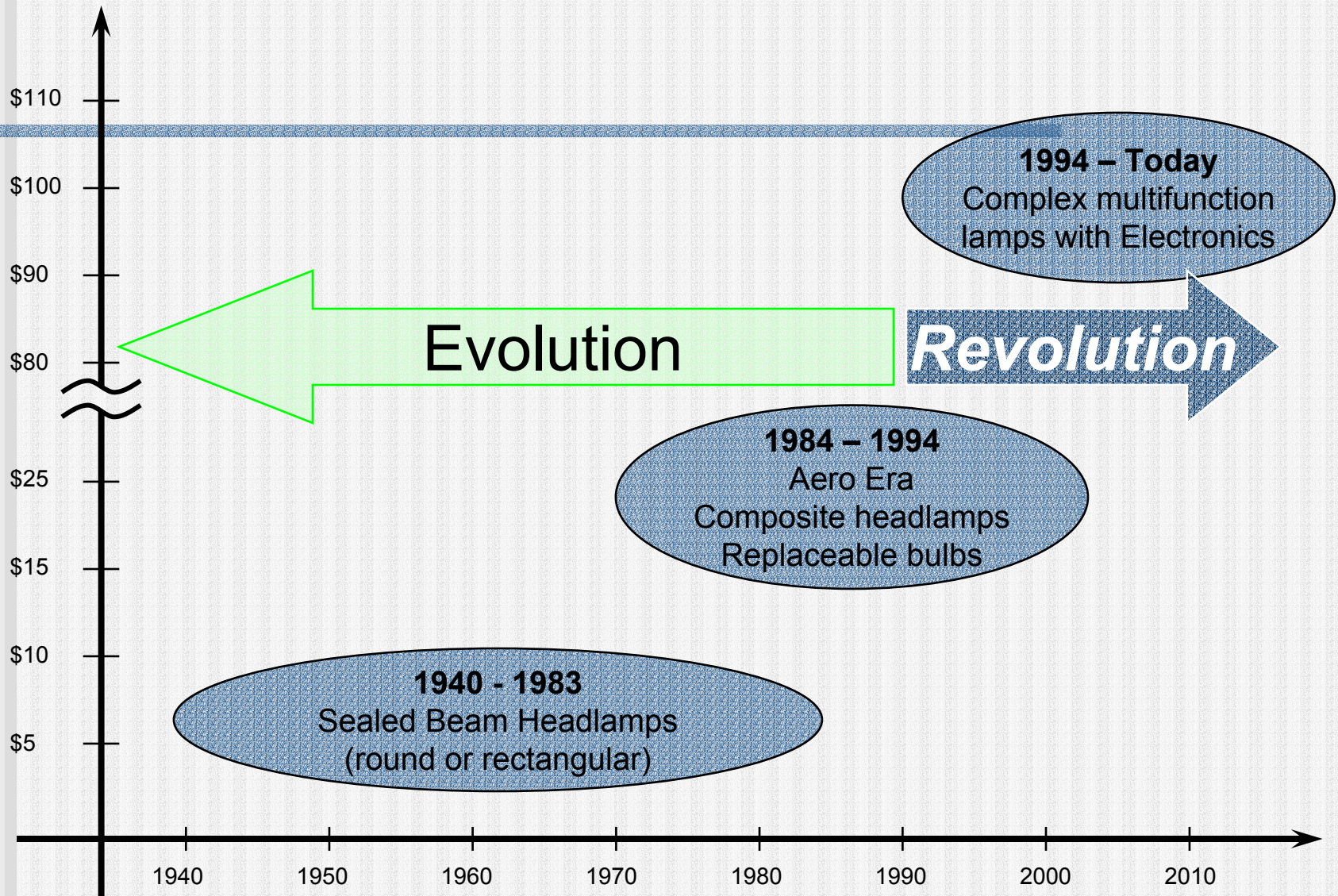
July 13, 2004

Washington, D.C.

Agenda

- Reflections on the Past
- “The Times They are A’changin’”
- Through the “Looking Glass” Tomorrow and the Future
- A “Ray” of Hope

Evolution/Revolution



Yesterday

Rectangular and Round Sealed Beam Headlamps



Lens Optics



Lens Optics



Lens Optics



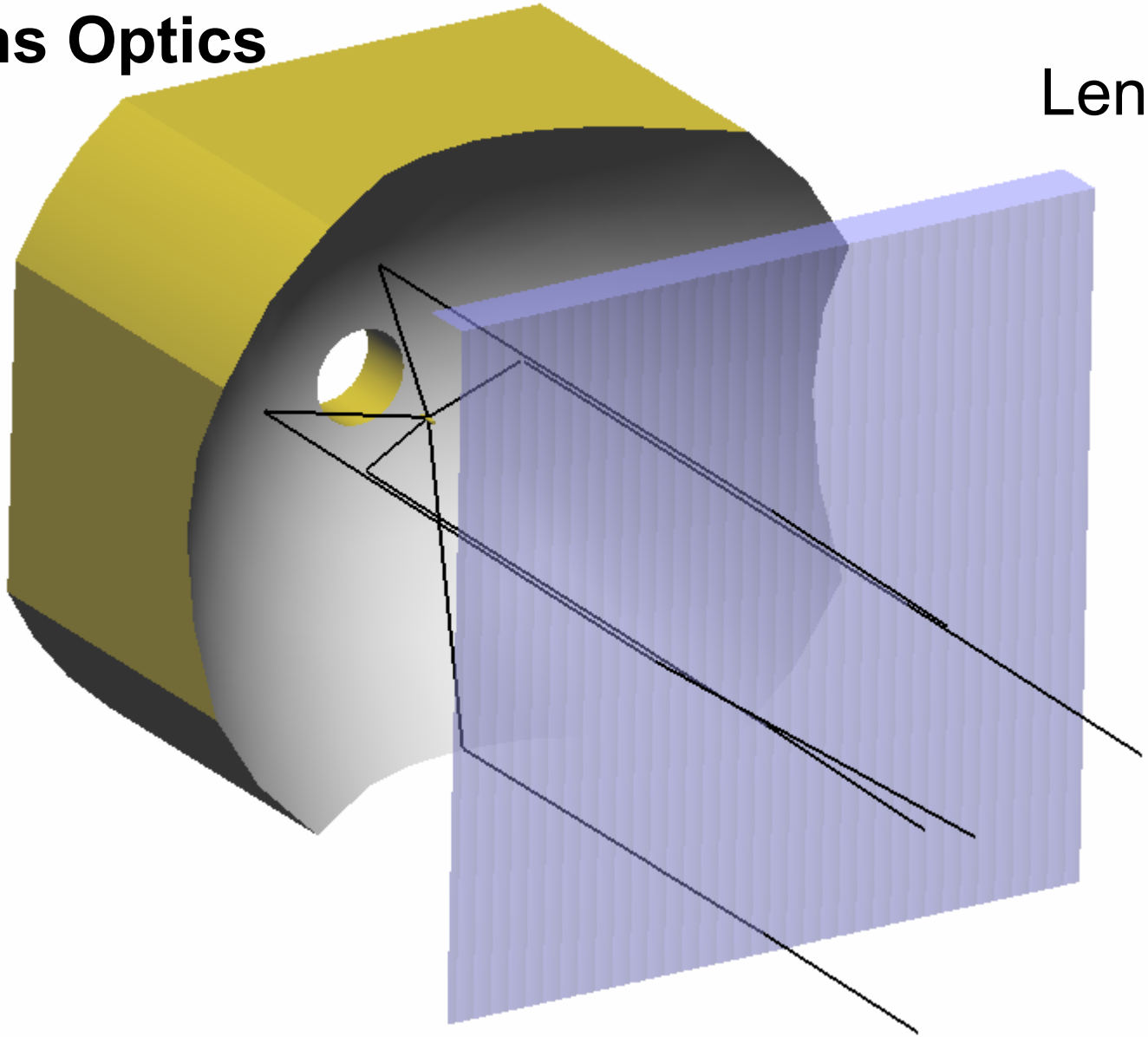
Lens Optics



Parabolic Reflector with Lens Optics

Reflector

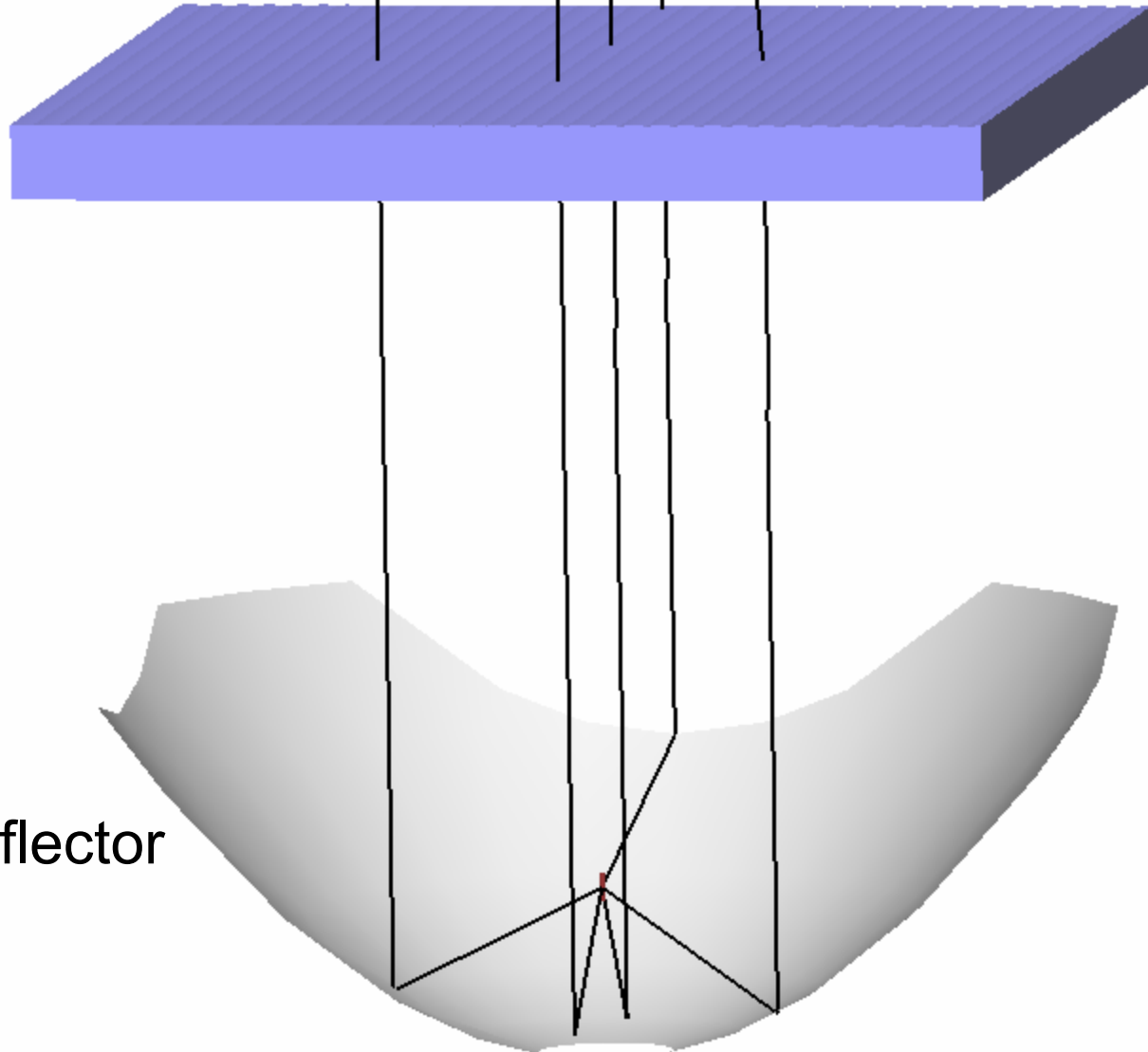
Lens



Parabolic Reflector with Lens Optics

Lens

Reflector



Today

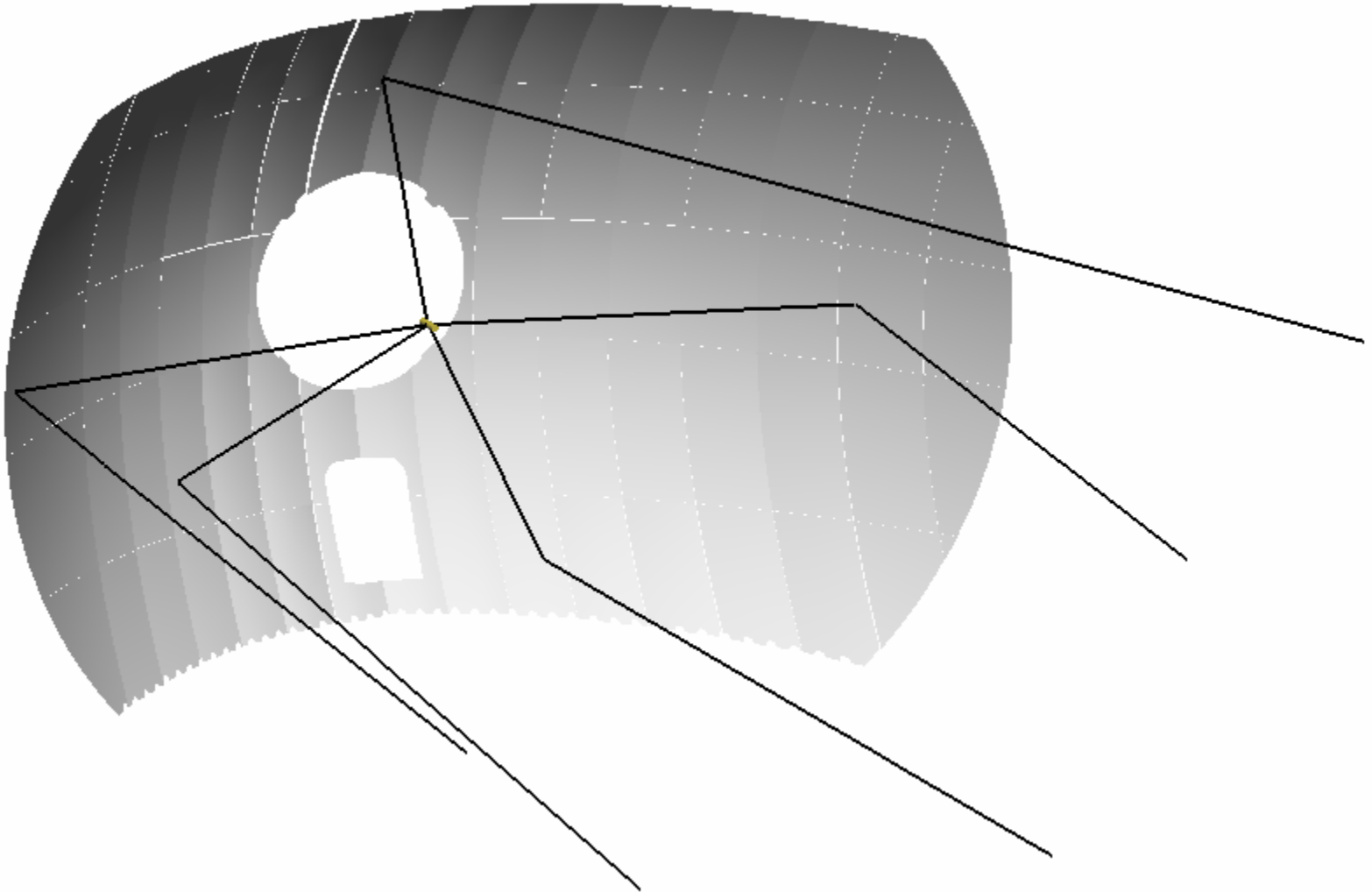
Complex Reflector



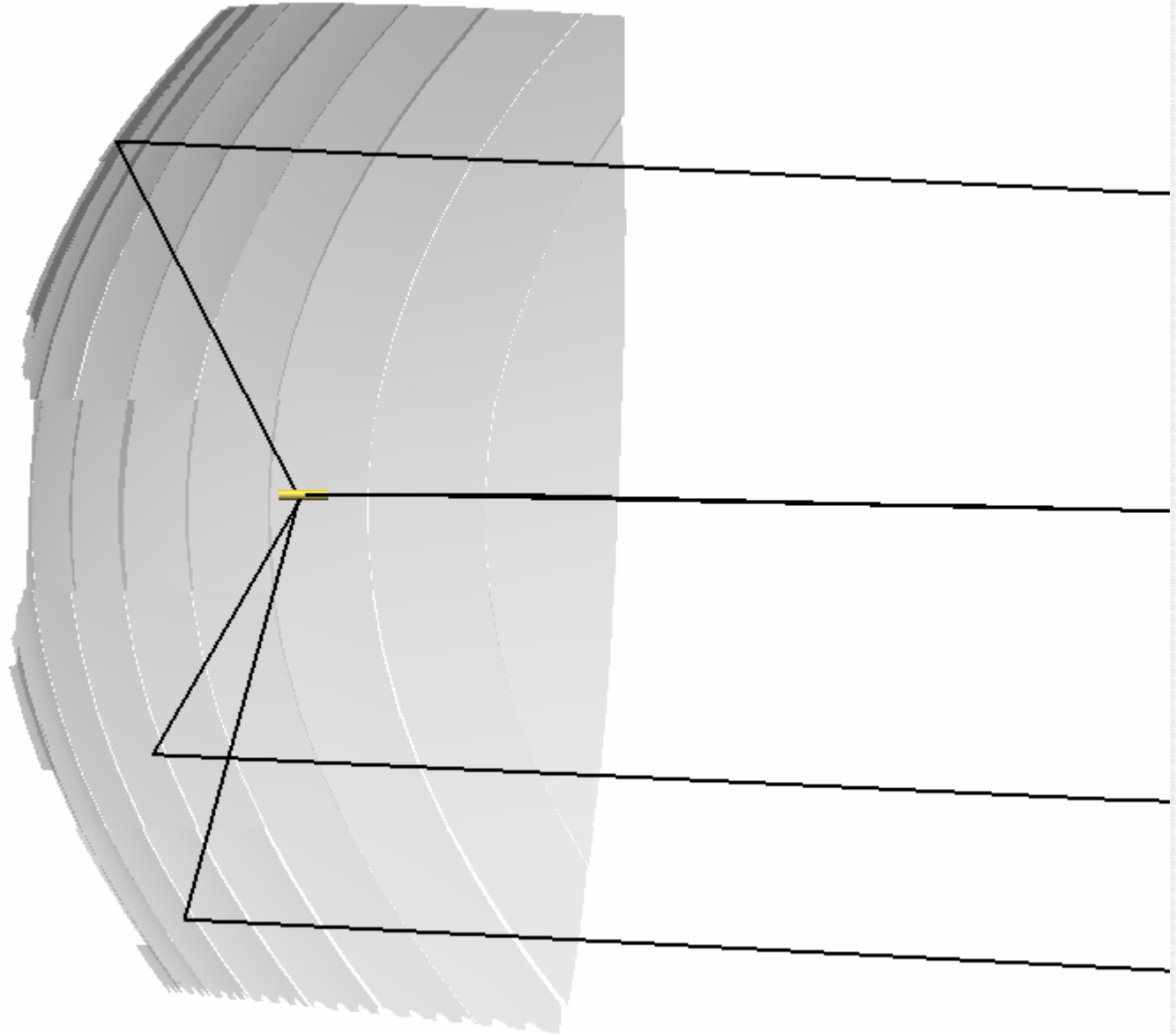
Complex Reflector



Complex Reflector



Complex Reflector



Projector System



Projector Low Beam – Complex High Beam



The Gattling Gun

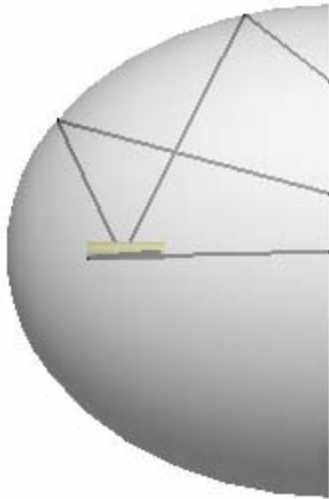


Projector Headlamps with AFS



Projector Lamp

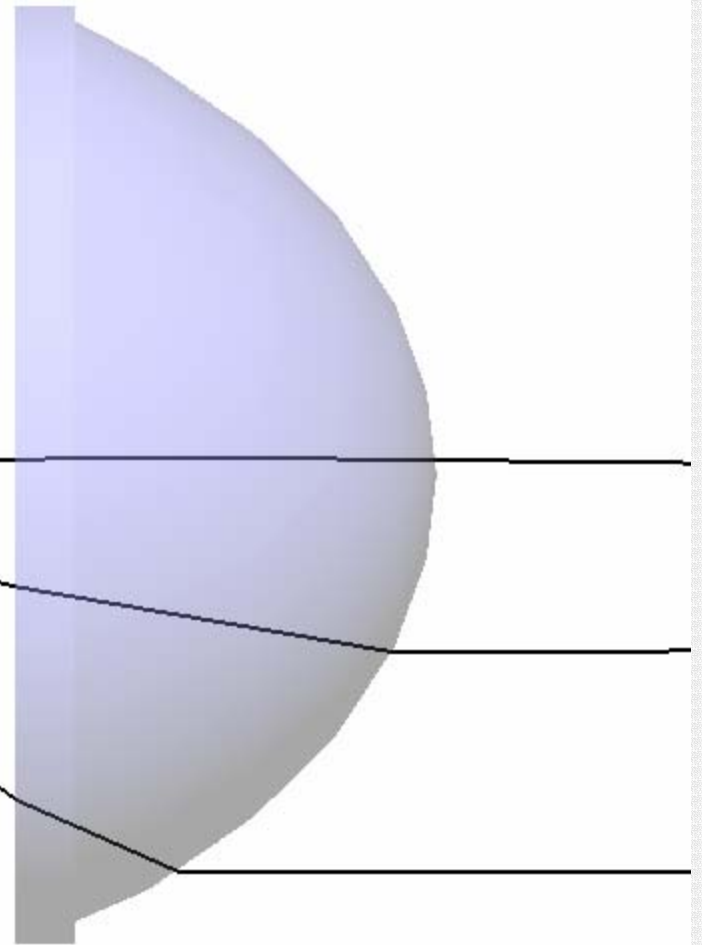
Reflector



Shield



Lens

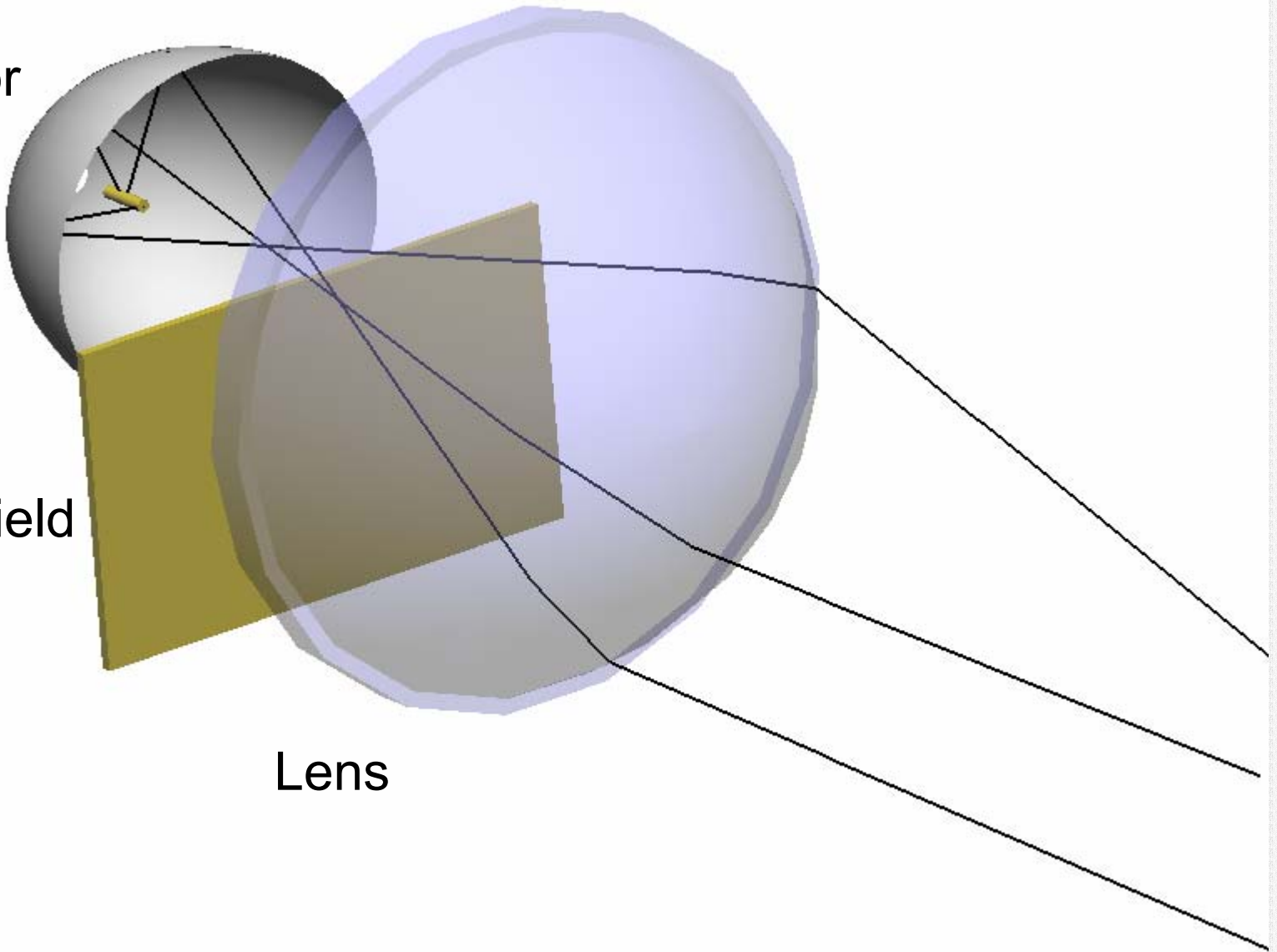


Projector Lamp

Reflector

Shield

Lens



Tomorrow

Light)





Breakthrough Styling



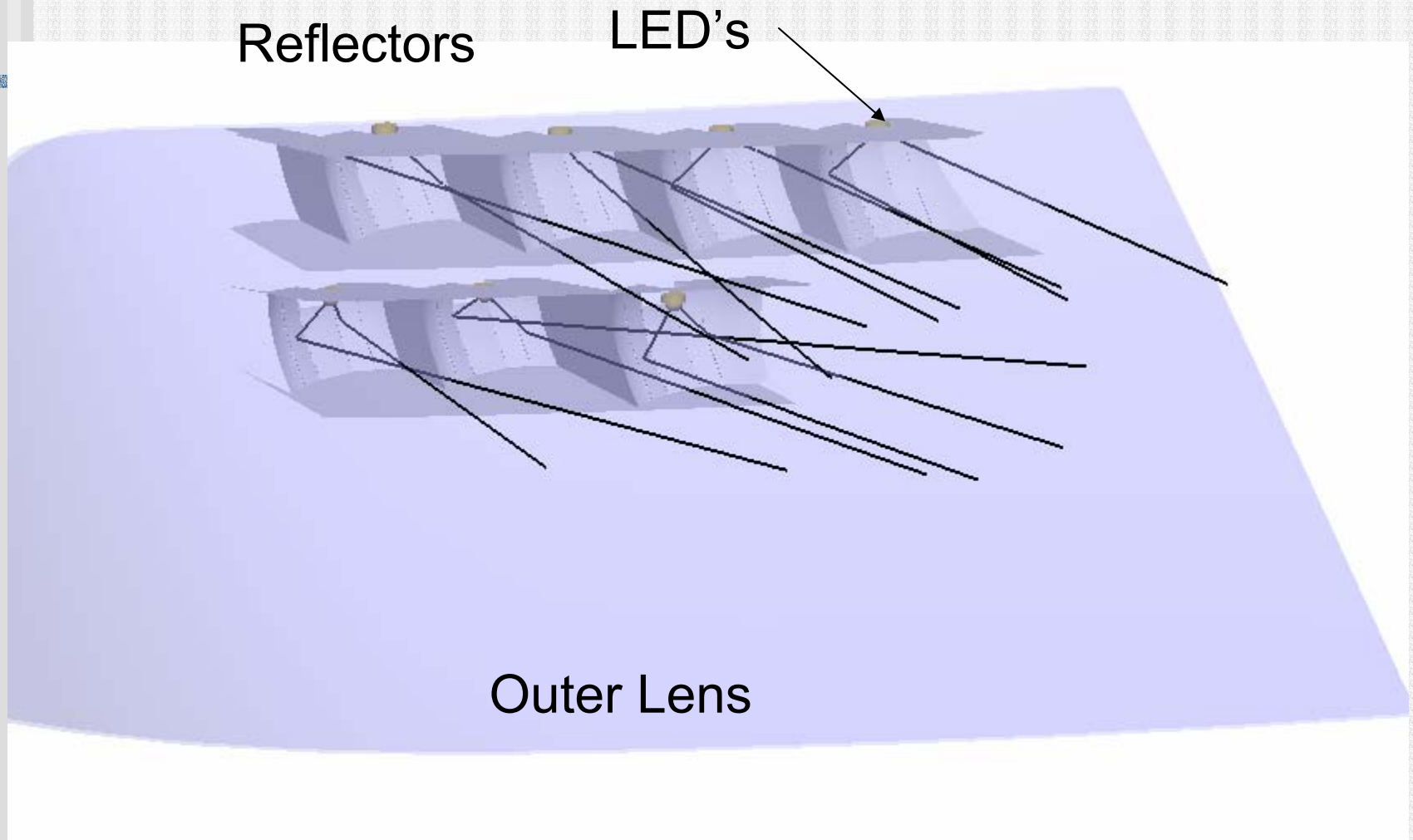
Low Beam



Fog Lamp



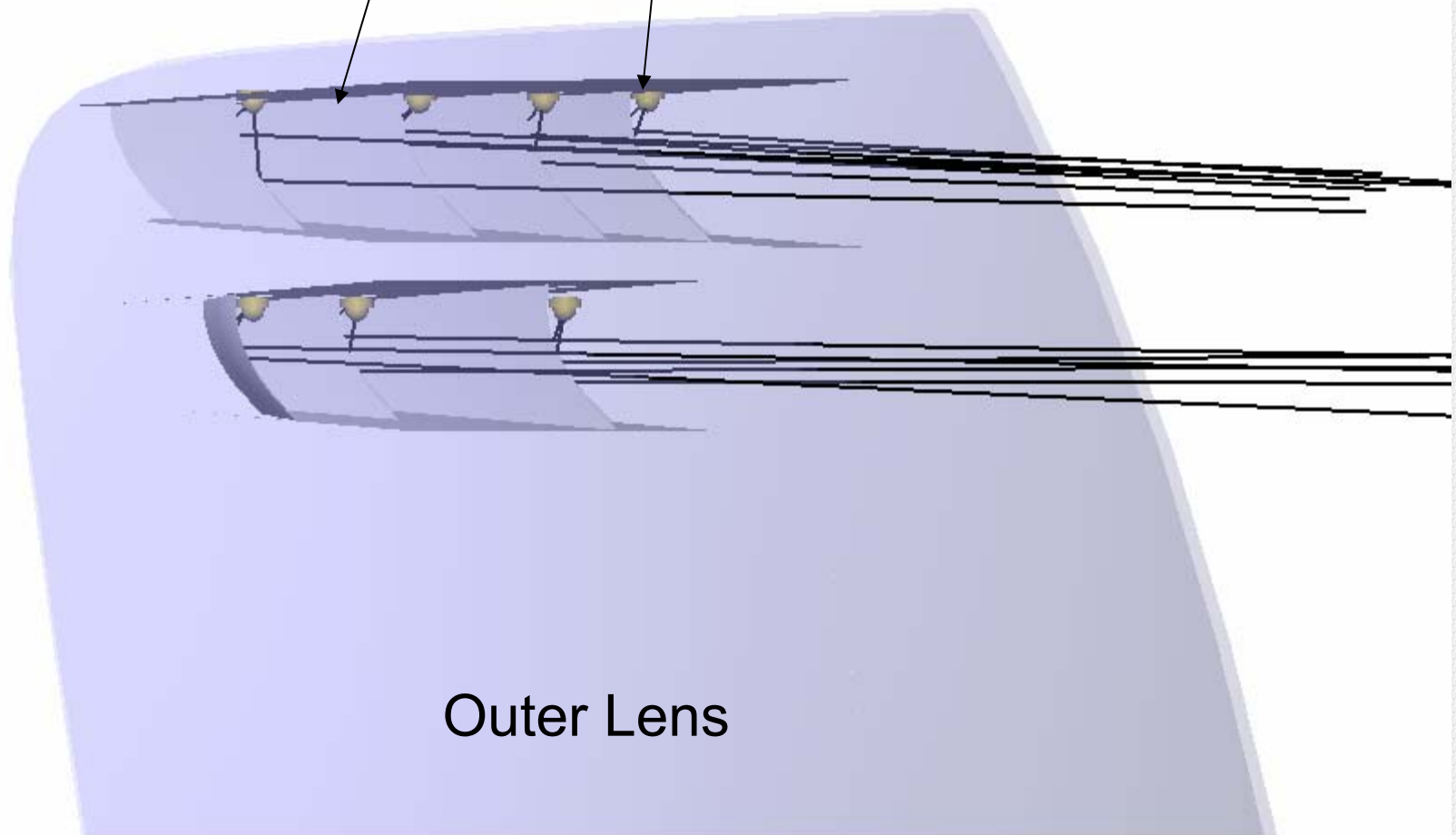
LED Lamp



LED Lamp

Reflectors

LED's



Outer Lens

100

Tokyo Auto Show:



Tokyo Auto Show:

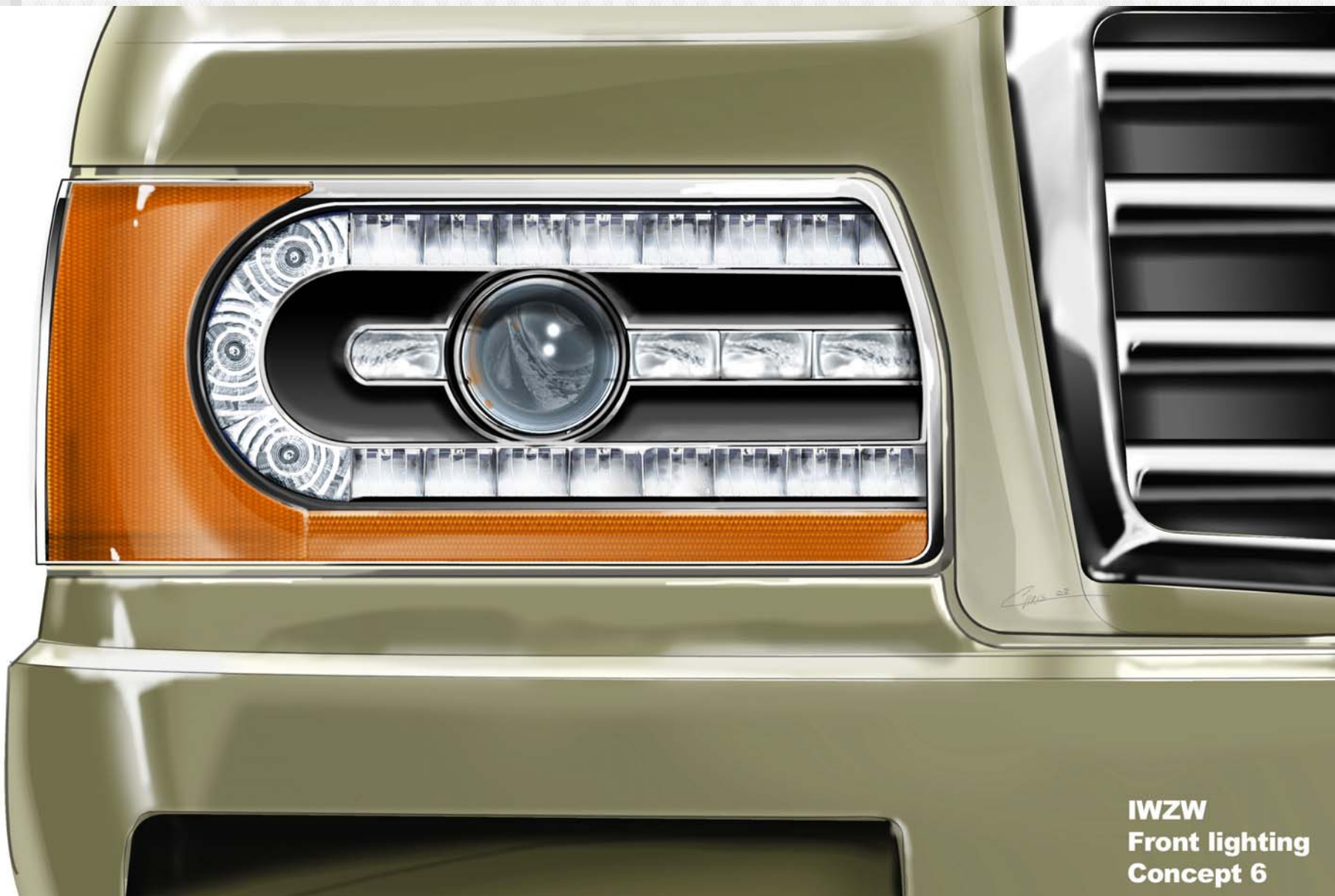


LED Front Lighting – All Functions



Slow Speed Cornering Function





IWZW
Front lighting
Concept 6





LED Forward Lighting Concept



Lit Appearance



The Future

LEDs: Concept Vehicles (Hyundai, Mazda, Mitsubishi)



LEDs: Concept Vehicles (Nissan, Subaru)



LEDs: Concept Vehicles (Suzuki, Toyota)



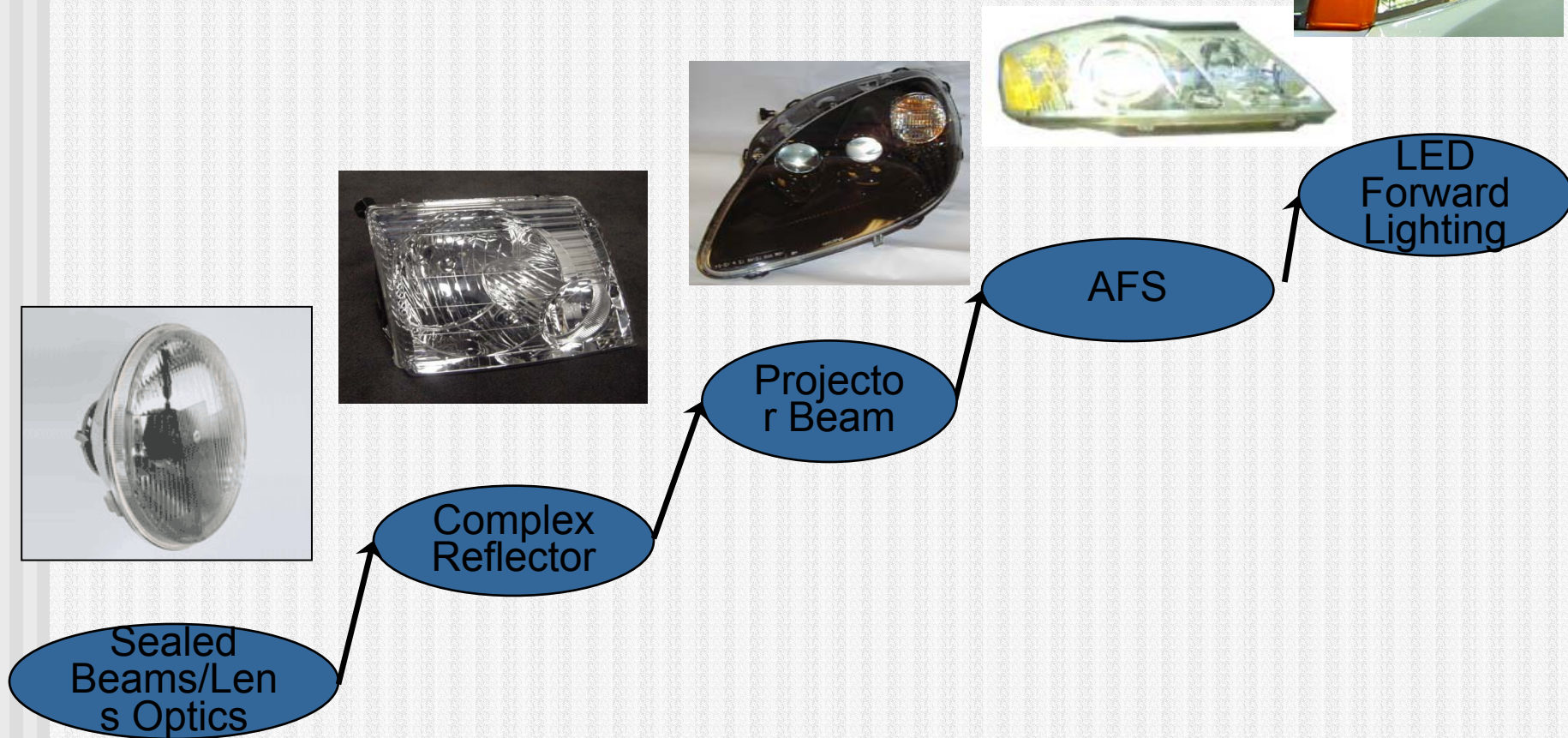
LEDs: Concept Vehicles (Daihatsu, Honda)



Concept Vehicle with Hybrid System



Lighting Headlamp History



You Can Only

Imagine What's Next